

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 16-34 are pending in the application. Claims 16 and 29 being independent.

Claims 1-34 stand rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 4,989,943 (Yoshinaga, et al.) in view of Japanese Patent Application No. 61-59303 (Ohmura, et al.).

For the foregoing reasons, Applicant submits that the independent claims are allowable over the documents of record, and requests withdrawal of the rejection under 35 U.S.C. §103.

Independent Claim 29 relates to a method of fabricating an apparatus. The method comprising the steps of preparing a thermally-conductive substrate for arranging in a predetermined position a light-emitting device or a light-receiving device, and for holding a lens in a predetermined position on the substrate, arranging the device in the predetermined position on the substrate, holding the lens in the predetermined position on the substrate, heating the substrate and the lens held thereby to a temperature below a thermally-softening temperature of the lens and above a thermally-softening temperature of a core of a plastic optical fiber, and pressing an end face of the plastic optical fiber against the heated lens to embed at least a part of the lens in the end face of the plastic optical fiber and cause an end of the plastic optical fiber to have a function of controlling light rays.

In contrast, the patents to Yoshinaga, et al. and Ohmura, et al. are not understood to disclose or suggest the step of preparing a thermally-conductive substrate for arranging in a

predetermined position a light-emitting device or a light-receiving device, and for holding a lens in a predetermined position on the substrate, as recited by Claim 29.

The failure of these references to disclose or suggest at least this feature proves fatal to establishing a prima facie case of obviousness against Claim 29, since MPEP §2142, requires that:

To establish a prima facie case of obviousness... the prior art reference (or references when combined) must teach or suggest all the claim limitations.

For this reason, independent Claim 29 is allowable over these documents.

Page 3 of the Office Action, after rejecting the apparatus claims, states that the method of fabricating an optical fiber as recited in the method claims is an obvious variation because “the limitations recited in the apparatus claims are identical to the method claims”. But, this conclusion is inaccurate. The method claims recite a method of fabricating an apparatus, which is different from the apparatus itself. In order to reject method Claim 29, the Office must cite documents that teach or suggest all the claim limitations of method Claim 29. But, this the Office has not done. The Office Action fails to allege that the cited documents teach the step of preparing a thermally-conductive substrate for arranging in a predetermined position a light-emitting device or a light-receiving device, and for holding a lens in a predetermined position on the substrate, as recited by Claim 29. Moreover, as noted above, Applicant does not understand the patents to Yoshinaga, et al. and Ohmura, et al. to disclose this feature. Therefore, the Office has not yet established a prima facie case of obviousness against independent Claim 29.

Independent Claim 16 relates to an apparatus comprising a light-emitting device or a light-receiving device, arranged on a substrate, a plastic optical fiber including a core and

a cladding, and a lens having a function of controlling light rays, the lens being arranged above the device and formed of a material with a thermally-softening temperature higher than a thermally-softening temperature of the core, and at least a part of the lens being embedded in an end face of the plastic optical fiber.

The Office Action cites the Yoshinaga, et al. patent as showing all of these features, except for the embedding of at least part of the lens in an end face of the optical fiber. For this reason, the Office Action cites the Ohmura, et al. patent to show such embedding. Page 3 of the Office Action states that it would be obvious to combine the teachings of these two documents so that the lens 12 shown in the Yoshinaga, et al. patent, which is spaced apart from the optical fiber 10, is at least partially embedded in the end face of the optical fiber 10 “to control the light projection in the fiber”. But this explanation for combining the teachings of these documents raises more questions than it answers. For example, how does this arrangement solve some problem in the optical fiber lens assembly of the Yoshinaga, et al. patent? Where in the references is this motivation found? And why is this modification of the Yoshinaga, et al. patent more advantageous than the arrangement already disclosed therein? MPEP § 2142 and §2143 require answers to these questions before the Office can satisfy its burden to establish a *prima facie* case of obviousness. And the Office Action fails to provide these answers. This can be seen as follows.

MPEP § 2142 requires the Examiner to “bear the initial burden of factually supporting any *prima facie* conclusion of obviousness.” MPEP § 2143 explains this burden:

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references."

And MPEP § 2143.01 explains the sources of the motivation to combine the art:

There are three possible sources for a motivation to combine references: the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art.

But, the Office Action does not discuss the motivation from these sources in any detail, thereby failing to provide the convincing line of reasoning required by MPEP § 2143.

For example, the Office Action does not specify the problem to be solved by these patents, nor does the Office Action discuss how moving the lens 12 in the Yoshinaga, et al. patent from its position spaced away from the fiber 10 to a position so that at least part of it is embedded in the end face of the fiber solves such a problem.

Moreover, neither patent is understood to discuss the problem solved by embedding at least a part of the lens in an end face of a plastic optical fiber. Rather, column 1, lines 22-25 and column 3, lines 43-46 of the Yoshinaga, et al. patent merely indicate that it is directed to an optical fiber lens assembly with a lens spaced from an optical fiber that can be assembled without specialized tools and an optical circuit device with stabilized dimensions. And pages 3 and 4 of the English translation of the Ohmura, et al. patent

merely state that it is directed to an optical fiber having a core component made of resin that is excellent in flexibility and having a cross-linked structure that has excellent environmental durability. These documents are also not understood to discuss moving the lens 12 in the Yoshinaga, et al. patent from its position spaced away from the fiber 10 to a position at least partially embedded in an end face therein. Thus, the documents themselves do not provide the motivation to modify the Yoshinaga, et al. patent to produce the invention of Claim 16. Further, the Yoshinaga, et al. patent provides an elaborate structure, involving an elastic inner sleeve 14, an intermediate sleeve 16, an outer sleeve 18, and a ferrule 20 for positioning the lens 12 at a precise distance from the fiber 10, and the Office Action fails to explain how this elaborate structure of fixing the lens 12 a distance away from the fiber 10 could or should be modified to produce the claimed embedding or how this modification would affect the purposes of the invention discussed in this patent.

Finally, the Office Action fails to explain how and why the knowledge of persons skilled in the art would motivate them to move the lens 12 in the Yoshinaga, et al. patent from its position spaced away from the fiber 10 to a position at least partially embedded in an end face therein, especially since the references themselves fail to suggest this possibility and since the Yoshinaga, et al. patent provides an elaborate structure for spacing the lens 12 from the optical fiber 10.

Rather than address these issues, as required by MPEP § 2143, the Office Action merely proposes modifying these documents “to control the light projection in the fiber”. Applicant submits that this extremely brief explanation, which fails to discuss the problem to be solved, the portions of the art providing this motivation, or the knowledge of the

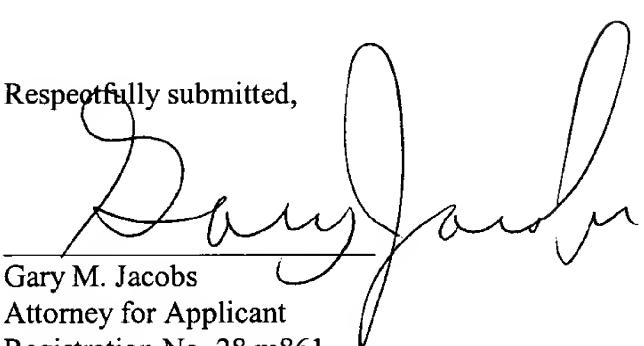
skilled artisan, do not constitute the "convincing line of reasoning" required by MPEP § 2142. For this reason, Applicant respectfully submits that the Office has not yet established a prima facie case of obviousness against independent Claim 16.

The remaining claims in the present application are dependent claims which depend from the independent claims, and thus are patentable over the applied documents for reasons noted above with respect to those claims. In addition, each recites features of the invention still further distinguishing it from the applied documents. Applicants request favorable and independent consideration thereof.

In view of the above amendments and remarks, the claims are now in allowable form. Therefore, early passage to issue is respectfully solicited.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All written correspondence should continue to be directed to our below listed address.

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